

WHAT IS CLAIMED IS:

1. A method for altering a plausible sequence of pathological events in retinal ganglion optic cells associated with glaucoma, the sequence including the pathological depolarization of retinal ganglion cells, an influx of millimolar amounts of sodium via non-inactivating sodium channels and a subsequent reversal of the sodium/calcium exchanger, mediated by both membrane depolarization and increased intracellular sodium, causing a toxic buildup of intracellular calcium, said method comprising blocking of associated non-inactivating Na^+ channels in retinal ganglion cells in order to limit sodium/calcium exchange in the retinal ganglion cells and prevent buildup of the calcium level in the retinal ganglion cells to a lethal level.

2. The method of claim 1 wherein the blocking comprises administering to the retinal ganglion cells a pharmaceutical composition having an active ingredient with non-inactivating sodium channel blocking activity.

3. The method of claim 2 wherein the composition having non-inactivating sodium channel blocking activity is selected from the group consisting of benzothiazole, riluzole, phenyl benzothiazole and lifarizine.

4. The method of claim 2 wherein the composition comprises an ophthalmic solution adapted for administration to the eye of a mammal in the form of intracameral injection.

5. The method of claim 4 wherein a concentration of the active ingredient in said composition is between about 0.0001 and about 1 percent weight by volume.

6. A method for maintaining normal intracellular Na^+ and Ca^+ in ganglion cells following a period of anoxia, said method comprising contacting said ganglion neuronal cells with a composition for blocking of non-inactivating calcium channel activity in the retinal ganglion neuronal cells.

10 7. The method of claim 6 wherein the composition for blocking non-inactivating sodium channels is selected from the group comprising of benzothiazole, riluzole, phenyl benzothiazole and lifarizine.

15 8. The method of claim 7 wherein the composition comprises an ophthalmic solution adapted for administration to the eye of a mammal in the form of intracameral injection.

20 9. The method of claim 8 wherein a concentration of the active ingredient in said composition is between about 0.0001 and about 1 percent weight by volume.

25 10. A pharmaceutical composition useful for preventing retinal ganglion cell death, associated with glaucoma, in the eye of a mammal, the composition comprising as its active ingredient one or more compounds having non-inactivating sodium channel blocking activity.

30 35 11. The pharmaceutical composition of claim 10 wherein the compound having non-inactivating sodium channel blocking activity is selected from the group consisting of benzothiazole riluzole, lubelezole, phenyl benzothiazole and lifarizine.

12. The pharmaceutical composition of claim 10 where the composition is an ophthalmic solution,

adapted for administration to the eye of a mammal in the form of an intracameral injection.

13. The pharmaceutical composition of claim 12
5 wherein the composition contains approximately 0.0001 to 1 percent weight by volume of said compound having non-inactivating sodium channel blocking activity.

10 14. A method for preventing retinal ganglion cell death, associated with glaucoma, in an animal of the mammalian species, including humans, comprising the step of administering to the ganglion optic nerve of said mammal a pharmaceutical composition which comprises as its active ingredient 15 one or more compounds having non-inactivating sodium channel blocking activity.

15. The method of claim 14 wherein the compound having non-inactivating sodium channel blocking activity is selected from the group consisting of benzothiazole riluzole, phenyl benzothiazole and lifarizine.

25 16. The method of treatment of claim 15 wherein the composition is an ophthalmic solution adapted for administration to the eye of a mammal in the form of intracameral injection.

30 17. The method of treatment of claim 14 wherein in the ophthalmic composition the concentration of the compound having non-inactivating sodium channel blocking activity is in the range of approximately 0.0001 to 1 percent weight by volume.

35 18. A method for providing neuroprotective effect to retinal ganglion cells in the eye of a human which comprises the step of administering to

the human a pharmaceutical composition which comprises as its active ingredient one or more compounds having non-inactivating sodium channel blocking activity.

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19. The method of claim 18 wherein the compound having non-inactivating sodium channel blocking activity is selected from the group consisting of benzothiazole riluzole, phenyl benzothiazole and lifarizine.

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20. The method of claim 19 wherein the composition contains approximately 0.0001 to 1 percent weight by volume of said compound having non-inactivating sodium channel blocking activity.

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21. A pharmaceutical composition useful for preventing retinal ganglion cell death, associated with glaucoma, in the eye of a mammal, the composition comprising as its active ingredient one or more compounds having non-inactivating sodium channel blocking activity enabling recovery of normal excitability in retinal ganglion cells following a period of anoxia.

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22. The composition of claim 21 wherein the recovery of normal excitability following a one hour period of anoxia is at least 30 percent.